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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,711	12/27/2001	Akio Nagasaka	HITA.0151	9249

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EXAMINER
LE, BRIAN Q

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/026,711	NAGASAKA ET AL.
	Examiner	Art Unit	
	Brian Q. Le	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _27 November 2007_.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-20_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-4,7,8,11-16 and 18-20_ is/are rejected.

7) ☒ Claim(s) _5-6, 9-10 and 17_ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Response to Amendment and Arguments

1.   Applicant's amendment filed November 27, 2007, has been entered and made of

record.

2.   The rejection of claims 1-19 under 35 U.S.C. 112, first paragraph is withdrawn.

3.   Applicant's arguments, see Remarks, filed 11/27/2007, with respect to the

rejection(s) of claim(s) 1, 2-4, 7-8, 11-14, 16, and 18-19 under 35 U.S.C. 103(a) have been fully

considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon

further consideration, a new ground(s) of rejection is made in view of O'Hair U.S. Patent No.

5,315,668.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   Claims 1, 2-4, 7-8, 11-14, 16, and 18-19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the combination of Ohya et al. "Recognizing characters in scene images",

I.E.E.E. Pattern Analysis and Machine Intelligence, Volume 16, Issue 2, Pages 214-220, Bauer et

al. U.S. Patent No. 6,751,603 and further in view of O'Hair U.S. Patent No. 5,315,668.

Regarding claim 1, Ohya teaches a method for searching at least one character image

embedded in an image (abstract), comprising:

providing a first image (the process of generating images would including providing a first

image) (abstract);

detecting a character region in the first image (the detection of various images would include

the detection of first image) (page 215, second column, first paragraph) based upon a shape

thereof(FIG. 1-FIG. 3);

extracting a first feature of the character region (FIG. 2, region number = 1);

providing a character string of interest (FIG. 1-FIG.3);

extracting a second feature from the second image (FIG. 2, region number = 2);

comparing the first image feature with the second image feature to determine a level of

similarity (page 215, second column, first paragraph and page 217, first column); and

outputting the character region or the input first image comprising the character region with

based on the level of similarity (FIG. 4).

However, Ohya does not explicitly teach a generation of an image of said character string of

interest and does not teach a concept of comparing image features without breaking down the

first image and second image features per character into separate characters.

Bauer further teaches a method of processing document and searching string image

(abstract and column 5, lines 45-57) wherein generating an image (pictures are images) (column

5, lines 43-47) of said character string of interest by a user ("In particular, the method results in

the suggestion of an individual data file name based on a character or character string input by

the user" at column 2, lines 32-35). Modifying Ohya's method of method of searching for

character string image according to Bauer would be able to allow user to receive interested

character string from user. This would improve processing because it would help user to identify

picture file in plurality of files rapidly by a search string(abstract, first 2 lines) and therefore, it would have been obvious to one of the ordinary skill in the art to modify Ohya according to Bauer.

O'Hair teaches an image analysis and recognition includes reading text (abstract, line 1) wherein comparing image features (FIG. 42, box 220) to determine a level of similarity (correlation or confident levels) (Fig. 43d and column 5, lines 23-26) therebetween without breaking down the first and second image features per character into separate characters (the concept of comparing blocks of entire words, phrases without breaking down further into separate characters) (column 5, lines 1-3 and column 2, lines 26-33). Modifying Ohya's method of method of searching for character string image according to O'Hair would be able to compare image features without breaking down image features per character into separate characters. This would improve processing because it would help increase the recognition rate and decrease in the rejection rate (column 3, lines 1-8) and therefore, it would have been obvious to one of the ordinary skill in the art to modify Ohya according to O'Hair.

Regarding claim 2, Ohya teaches the display or both high level of similar and low level of similarity (page 217, first column). However, Ohya does not explicitly teach the method for searching character image in an image, wherein at the step of outputting said character region outputs character regions in the descending order of the level of similarity. The Examiner takes Office Notice that it would have been obvious to one skilled in the art that the level of similarity can be output at the descending or ascending order as a conventional displaying order. This type of output (descending/ascending) output would have been obvious to one of the ordinary skilled in the art to organize the output data/level of similarity.

Regarding claim 3, Ohya teaches the method for searching at least one character string image in an image wherein the step of detecting said character region involves extracting equiluminance pixel strings each of which has luminance differences from a background in a predesignated range has a length of a pre-designated extent (the detection and extraction of character if pixels of the detected character have similar pixel values which are different from the background pixels values) (FIG. 1-FIG.3 and page 215).

For claim 4, Ohya teaches the method for searching at least one character string image in an image wherein the step of detecting said character region involves extracting equi-luminance pixel strings, each of which has a length equal to or longer than a pre-designated length in both vertical and horizontal directions and has a luminance difference from a background within a pre-designed range in both of the vertical and horizontal directions (the detection and extraction of character if pixels of the detected character have similar pixel values which are different from the background pixels values) (FIG. 1-FIG.3 and page 215).

For claim 7, please refer back to claim 1 for the teaching. In addition, Ohya teaches a mean for detecting a character region from the frame of the entered image on the basis of its shape (FIG. 1-3). And an output means for outputting as the result of search the character region matching the visual features in respect of which the level of similarity has been determined or a frame of image containing the region (page 215; FIG. 1-4 and page 217, first column, first paragraph).

For claim 8, please refer back to claim 2 for further teachings and explanations.

For claim 11, please refer back to claims 1 and 7 for further teachings and explanations.

Regarding claim 12, Ohya discloses the method whereby the step of detecting said character region includes extracting lines width a width in a specific range and extracting a concentrated region of the extracted lines as said character region (FIG. 1, FIG. 2 and page 216, B. Detecting Character Candidate Regions).

For claim 13, please refer back to claims 3 and 4 for the teachings and explanations.

For claim 14, Ohya also discloses the method whereby the line width is taken in vertical and horizontal directions (FIG. 1 and FIG. 2).

Regarding claim 16, Ohya further teaches the program wherein the module for detecting said character region extracts a character image feature string along one dimension of the character region (the extraction/segmentation by either vertical or horizontal direction and thus along one dimension of character region (page 215, column 2, A. Image Segmentation Using Local Thresholding, first paragraph; FIG. 2 and FIG. 3).

Regarding claim 18, Ohya discloses the method further comprising a step of removing non-character background in the image by outlining the character region with a rectangle box having a sufficient margin, then removing pixels outside of the rectangle box, and wherein the output step outputs the character with the rectangle box (FIG. 2; FIG. 3; page 216 and page 218).

For claim 19, please refer back to claim 18 for the teachings.

6.   Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ohya et al. "Recognizing characters in scene images", I.E.E.E. Pattern Analysis and Machine Intelligence, Volume 16, Issue 2, Pages 214-220, Bauer et al. U.S. Patent No. 6,751,603, O'Hair

U.S. Patent No. 5,315,668 as described in claim 11-14, and further in view of Akira et al. "A

method for recognizing character strings from maps using linguistic knowledge.", I.E.E.E. 1993,

pages: 561-564.

Regarding claim 15, Ohya does not explicitly teach the concept of concentrated region is

decided by projections of the lines in the vertical and horizontal directions. However, Akira

teaches a method of searching/recognition of character image embedded in an image (character

from maps of various figures) (abstract) wherein concentrated region (pixel density) is decided

by projections (multiplying pixels) of the lines in the vertical and horizontal directions (page

562, first column, 3.1 Character Candidates Extraction). Modifying Ohya's method of searching

character image embedded in an image according to Akira would able to one of the ordinary

skilled in the art to determine the concentration of the image region by projection of the lines

(multiplying pixels) in the x direction with a pixel number in the y direction. This would

improve processing and therefore, it would have been obvious to one of the ordinary skill in the

art to modify Ohya according to Akira.

7.   Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination

of Ohya et al. "Recognizing characters in scene images", I.E.E.E. Pattern Analysis and Machine

Intelligence, Volume 16, Issue 2, Pages 214-220, Bauer et al. U.S. Patent No. 6,751,603, O'Hair

U.S. Patent No. 5,315,668 as described in claim 1, and further in view of Yahagi U.S. Pub. No.

2002/0064311.

Regarding claim 20, Yahagi teaches the method wherein the first and second image

features are elastically (changes of character features) (Fig. 3), extracted (page 216, column 1,

last paragraph) and compared (page 215, second column, first paragraph and page 217, first

column). Ohya does not explicitly teaches a method of extraction one-dimensionally. Yahagi

further teaches a character string retrieval (abstract, first line) wherein one-dimensionally

extracted (extract keys from one-dimensional array) (page 15, column 2, [0236]). Modifying

Ohya's method of searching character image embedded in an image according to Ohya would be

able to provide an extraction means on-dimensionally to reduce number of idle spaces of a

dictionary without losing the high-speed of retrieval (page 2, column 1, [0022]). This would

improve processing and therefore, it would have been obvious to one of the ordinary skill in the

art to modify Ohya according to Yahagi.

Allowable Subject Matter

7.   Claims 5-6, 9-10 and 17 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

8.   Regarding claims 5-6, and 10, there is no prior art found to teach the limitations

"...feature to be extracted are one-dimensional feature strings whose numbers of edges in a

vertical direction are obtained by binarizing luminance of each pixel and counting numbers of

luminance changes in the character regions, when the character strings are arrayed

horizontally..." (claims 5 and 10); "... feature to be extracted are one-dimensional feature strings

whose numbers of edges in a horizontal direction are obtained by binarizing luminance of each

pixel and counting numbers of luminance changes in the character regions, when the character

strings are arrayed vertically ..." (claim 6); "...extracts equi-luminance pixels strings each of

which has a length equal to or longer than a pre-designated length and has a luminance

difference from a background within a pre-designated range." (claim 9) and "... a module for

removing line border blurring by correcting a border pixel luminance value into a maximum or

minimum luminance value into a maximum or minimum luminance value of adjacent pixels"

(claim 17).

Conclusion

9.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than

SIX MONTHS from the date of this final action.

Contact Information

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Brian Q. Le whose telephone number is 571-272-7424. The

examiner can normally be reached on 8:30 A.M - 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Le
Primary Examiner
February 7, 2008